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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,909	01/17/2002	Masayoshi Nishitani	24886	3391

20529 7590 09/27/2005

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EXAMINER	
CERVETTI, DAVID GARCIA	

ART UNIT	PAPER NUMBER
2136	

DATE MAILED: 09/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/046,909	NISHITANI ET AL.	
	Examiner	Art Unit	
	David G. Cervetti	2136	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☒ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's arguments filed June 30, 2005 have been fully considered but they are not persuasive.

2. Claims 1-9 are pending and have been examined.

Response to Amendment

3. Braudaway teaches selecting a rectangular cluster of pixels and works on pixels and adjacent pixels (columns 9-10, 16). Braudaway does not specify that the area has to be of a predetermined or larger than a base value (i.e., more than one pixel in width). A rectangular cluster of pixels is two dimensional, as is a line of pixels, i.e. using as unit of measure a foot, and having a line one foot-wide by 100 foot long, still renders a rectangular area, similarly, having as unit of measure a pixel, and having a line one pixel wide by 100 pixels in length, also renders a rectangular area. The Mathematical concept of line is one dimensional, but regarding digital images, a line of pixel data cannot be defined as one dimensional, since an image of one pixel has those dimensions, one pixel wide by one pixel high. Therefore, Braudaway concept of rectangular cluster of pixels can be interpreted as a rectangular cluster of pixels, one pixel wide by a larger than one number of pixels in length, or a ten-pixel by ten-pixel rectangle (a special case of a rectangle, or degenerate rectangle). A line can, according to this definition, applied to digital images, be interpreted as a rectangular cluster of pixels of one pixel wide by a larger than one number of pixels in length.

4. The combination of Braudaway and Powell still discloses the present invention since, even though Powell's invention is not expressly directed to a "line", it would have

been obvious to one of ordinary skill in the art to apply the teachings of Powell to the invention of Braudaway.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braudaway et al. (US Patent Number: 5,825,892, hereinafter "Braudaway"), and further in view of Powell et al. (US Patent Number: 6,137,892, hereinafter "Powell").

Regarding claim 1, Braudaway teaches a digital watermarking apparatus comprising: specifying means for specifying a line of pixel data included in received image signals (column 8, lines 1-6); encryption data generating means for encrypting the digital watermark and for outputting encryption data (column 7, lines 1-10). Braudaway does not disclose expressly mixing means for comparing an average of intensity values or color difference values of all pixels in the specified line in the received image signals with an intensity value or a color difference value of each pixel in a line adjacent to the specified line and in which the digital watermark is to be embedded, to find, for all pixels in the adjacent line, a first counter value and a second counter value, said first counter value indicating a number of pixels each of which has an intensity value or a color difference value larger than the average, said second counter value indicating a number of pixels each of which has an intensity value or a color difference value smaller than the average, for transforming the intensity value or the color difference value of each pixel in the adjacent line such that a relation between the first counter value and the second counter value becomes a preset relation

according to a first value or a second value of the encryption data from said encryption data generating means, and for outputting the received image signals as watermarked image signals. However, Powell teach mixing means for comparing an average of intensity values or color difference values of all pixels in the specified are in the received image signals with an intensity value or a color difference value of each pixel in a are adjacent to the specified are and in which the digital watermark is to be embedded (column 4, lines 10-34), to find, for all pixels in the adjacent area, a first counter value and a second counter value, said first counter value indicating a number of pixels each of which has an intensity value or a color difference value larger than the average, said second counter value indicating a number of pixels each of which has an intensity value or a color difference value smaller than the average, for transforming the intensity value or the color difference value of each pixel in the adjacent area (column 7, lines 5-40), such that a relation between the first counter value and the second counter value becomes a preset relation according to a first value or a second value of the encryption data from said encryption data generating means, and for outputting the received image signals as watermarked image signals (column 4, lines 52-67, column 5, lines 1-30). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use difference of averages to create the digital watermark in the system of Braudaway. One of ordinary skill in the art would have been motivated to perform such a modification to permit modification of the image without losing the digital signature (Powell, column 1, lines 37-49).

Regarding claim 2, the combination of Braudaway and Powell teaches the limitations as set forth under claim 1 above. Furthermore, Powell teaches wherein said mixing means comprises: average calculating means for calculating the average of the intensity values or the color difference values of the pixels in the specified line of the received image signals (column 4, lines 22-35); counter value calculating means for comparing the average with the intensity value or the color difference value of each pixel in the adjacent line to calculate, for all pixels in the adjacent line, the first counter value and the second counter value, said first counter value indicating the number of pixels each of which has an intensity value or a color difference value larger than the average, said second counter value indicating the number of pixels each of which has an intensity value or a color difference value smaller than the average; counter value comparing means for comparing the first counter value and the second counter value; and transforming means for transforming the intensity values or the color difference values of all pixels in the adjacent line (column 5, lines 1-15) such that, when the value of the encryption data from said encryption generating means is the first value, said counter value comparing means gives a comparison result indicating that the first counter value is larger than the second counter value and such that, when the value of the encryption data from said encryption generating means is the second value, said counter value comparing means gives a comparison result indicating that the first counter value is smaller than the second counter value, wherein the transformed signals are output as the watermarked image signals, the intensity value or the color difference value or each pixel in the adjacent line of the transformed signals being transformed by

said transforming means according to the value of the encryption data (column 4, lines 1-67, column 5, lines 1-24, column 8, lines 1-5).

Regarding claim 3, Braudaway teaches a digital watermarking method comprising: a first step for specifying a line of pixel data included in received image signals (column 8, lines 1-6); a second step for encrypting a digital watermark and for outputting encryption data (column 7, lines 1-10). Braudaway does not disclose expressly a third step for comparing an average of intensity values or color difference values of all pixels in the specified line in the received image signals with an intensity value or a color difference value of each pixel in a line adjacent to the specified line and in which the digital watermark is to be embedded, to find, for all pixels in the adjacent line, a first counter value and a second counter value, said first counter value indicating a number of pixels each of which has an intensity value or a color difference value larger than the average, said second counter value indicating a number of pixels each of which has an intensity value or a color difference value smaller than the average, and a fourth step for transforming the intensity value or the color difference value of each pixel in the adjacent line such that a relation between the first counter value and the second counter value becomes a preset relation according to a first value or a second value of the encryption data and for outputting the received image signals as watermarked image signals. However, Powell teach a third step for comparing an average of intensity values or color difference values of all pixels in the specified line in the received image signals with an intensity value or a color difference value of each pixel in an area adjacent to the specified area and in which the digital watermark is to be

embedded (column 4, lines 10-34), to find, for all pixels in the adjacent area, a first counter value and a second counter value, said first counter value indicating a number of pixels each of which has an intensity value or a color difference value larger than the average, said second counter value indicating a number of pixels each of which has an intensity value or a color difference value smaller than the average, and a fourth step for transforming the intensity value or the color difference value of each pixel in the adjacent area (column 7, lines 5-40), such that a relation between the first counter value and the second counter value becomes a preset relation according to a first value or a second value of the encryption data and for outputting the received image signals as watermarked image signals (column 4, lines 52-67, column 5, lines 1-30). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use difference of averages to create the digital watermark in the system of Braudaway. One of ordinary skill in the art would have been motivated to perform such a modification to permit modification of the image without losing the digital signature (Powell, column 1, lines 37-49).

Regarding claim 4, the combination of Braudaway and Powell teaches the limitations as set forth under claim 3 above. Furthermore, Powell teaches wherein said third step comprises: a fifth step for calculating the average of the intensity values or the color difference values of the pixels in the specified line of the received image signals (column 4, lines 22-35); and a sixth step for comparing the average with the intensity value or the color difference value of each pixel in the adjacent line to calculate, for all pixels in the adjacent line, the first counter value and the second counter value, said first

counter value indicating the number of pixels each of which has an intensity value or a color difference value larger than the average, said second counter value indicating the number of pixels each of which has an intensity value or a color difference value smaller than the average, and wherein said fourth step comprises: a seventh step for comparing the first counter value and the second counter value; and an eighth step for transforming the intensity values or the color difference values of all pixels in the adjacent line (column 5, lines 1-15) such that, when the value of the encryption data is the first value, a comparison result indicating that the first counter value is larger than the second counter value is obtained and such that, when the value of the encryption data is the second value, a comparison result indicating that the first counter value is smaller than the second counter value is obtained (column 4, lines 1-67, column 5, lines 1-24, column 8, lines 1-5).

Regarding claim 5, Braudaway teaches a digital watermark reproducing apparatus comprising: specifying means for receiving digitally watermarked image signals as input signals and for specifying a line of pixel data, said digitally watermarked image signals being generated by transforming signals in a line adjacent to the specified line of the image signals according to a value of encryption data generated by encrypting a digital watermark (column 16, lines 1-30). Braudaway does not disclose expressly extracting means for comparing an average of intensity values or color difference values of all pixels in the specified line in the digitally watermarked image signals with an intensity value or a color difference value of each pixel in the adjacent line to find, for all pixels in the adjacent line, a first counter value and a second counter

value, said first counter value indicating a number of pixels each of which has an intensity value or a color difference value larger than the average, said second counter value indicating a number of pixels each of which has an intensity value or a color difference value smaller than the average, and for extracting from the adjacent line the encryption data which is determined to be a first value or a second value according to a relation between the first counter value and the second counter value; and a decrypting means for decrypting the extracted the encryption data to an original watermark for output. However, Powell teaches extracting means for comparing an average of intensity values or color difference values of all pixels in the specified line in the digitally watermarked image signals with an intensity value or a color difference value of each pixel in the adjacent line (column 6, lines 12-28) to find, for all pixels in the adjacent line, a first counter value and a second counter value, said first counter value indicating a number of pixels each of which has an intensity value or a color difference value larger than the average, said second counter value indicating a number of pixels each of which has an intensity value or a color difference value smaller than the average (column 6, lines 29-54), and for extracting from the adjacent line the encryption data which is determined to be a first value or a second value according to a relation between the first counter value and the second counter value; and a decrypting means for decrypting the extracted the encryption data to an original watermark for output (column 6, lines 55-64). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use difference of averages to create the digital watermark in the system of Braudaway. One of ordinary skill in the art would

have been motivated to perform such a modification to permit modification of the image without losing the digital signature (Powell, column 1, lines 37-49).

Regarding claim 6, the combination of Braudaway and Powell teaches the limitations as set forth under claim 5 above. Furthermore, Braudaway teaches wherein said extracting means comprises: average calculating means for calculating the average of the intensity values or the color difference values of the pixels in the specified line of the digitally watermarked image signals (column 17, lines 5-44); counter value calculating means for comparing the average with the intensity value or the color difference value of each pixel in the adjacent line to calculate, for all pixels in the adjacent line, the first counter value and the second counter value, said first counter value indicating the number of pixels each of which has an intensity value or a color difference value larger than the average, said second counter value indicating the number of pixels each of which has an intensity value or a color difference value smaller than the average (column 16, lines 31-67); counter value comparing means for comparing the first counter value and the second counter value; and encryption data extracting means for extracting the encryption data determined to be the first value when said counter value comparing means gives a comparison result indicating that the first counter value is larger than the second counter value or for extracting the encryption data determined to be the second value (column 16, lines 31-67) when said counter value comparing means gives a comparison result indicating that the first counter value is smaller than the second counter value (column 21, lines 5-37).

Regarding claim 7, Braudaway teaches a digital watermark reproducing method comprising: a first step for receiving digitally watermarked image signals as input signals and for specifying a line of pixel data, said digitally watermarked image signals being generated by transforming signals in a line adjacent to the specified line of the image signals according to a value of encryption data generated by encrypting a digital watermark (column 16, lines 1-30). Braudaway does not disclose expressly a second step for comparing an average of intensity values or color difference values of all pixels in the specified line in the digitally watermarked image signals with an intensity value or a color difference value of each pixel in the adjacent line to find, for all pixels in the adjacent line, a first counter value and a second counter value, said first counter value indicating a number of pixels each of which has an intensity value or a color difference value larger than the average, said second counter value indicating a number of pixels each of which has an intensity value or a color difference value smaller than the average; a third step for extracting from the adjacent line the encryption data which is determined to be a first value or a second value according to a relation between the first counter value and the second counter value; and a fourth step for decrypting the extracted encryption data to an original watermark for output. However, Powell teaches a second step for comparing an average of intensity values or color difference values of all pixels in the specified line in the digitally watermarked image signals with an intensity value or a color difference value of each pixel in the adjacent line (column 6, lines 12-28) to find, for all pixels in the adjacent line, a first counter value and a second counter value, said first counter value indicating a number of pixels each of which has an

intensity value or a color difference value larger than the average, said second counter value indicating a number of pixels each of which has an intensity value or a color difference value smaller than the average (column 6, lines 29-54); a third step for extracting from the adjacent line the encryption data which is determined to be a first value or a second value according to a relation between the first counter value and the second counter value; and a fourth step for decrypting the extracted encryption data to an original watermark for output (column 6, lines 55-64). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use difference of averages to create the digital watermark in the system of Braudaway. One of ordinary skill in the art would have been motivated to perform such a modification to permit modification of the image without losing the digital signature (Powell, column 1, lines 37-49).

Regarding claim 8, the combination of Braudaway and Powell teaches the limitations as set forth under claim 7 above. Furthermore, Braudaway teaches wherein said second step comprises: a fifth step for calculating the average of the intensity values or the color difference values of the pixels in the specified line of the digitally watermarked image signals (column 17, lines 5-44); and a sixth step for comparing the average with the intensity value or the color difference value of each pixel in the adjacent line to calculate, for all pixels in the adjacent line, the first counter value and the second counter value, said first counter value indicating the number of pixels each of which has an intensity value or a color difference value larger than the average, said second counter value indicating the number of pixels each of which has an intensity

value or a color difference value smaller than the average (column 16, lines 31-67), and wherein said third step comprises: a seventh step for comparing the first counter value and the second counter value; and an eighth step for extracting the encryption data determined to be the first value when said seventh step gives a comparison result indicating that the first counter value is larger than the second counter value or for extracting the encryption data determined to be the second value (column 16, lines 31-67) when said seventh step gives a comparison result indicating that the first counter value is smaller than the second counter value (column 21, lines 5-37).

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Braudaway and Powell as applied to claim 1 above, and further in view of Abe (US Patent Number: 6,580,804).

Regarding claim 9, the combination of **Braudaway** and Powell does not expressly disclose wherein said specifying means specifies an edge line of pixel data included in the received image signal. However, Abe teaches wherein said specifying means specifies an edge line of pixel data included in the received image signal (column 3, lines 20-55). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to place a digital watermark along the edge of a digital image. One of ordinary skill in the art would have been motivated to do so make the digital watermark more resistant to image processing and or image deletion without an inordinate amount of calculation (Abe, column 1, lines 10-54).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David G. Cervetti whose telephone number is (571) 272-5861. The examiner can normally be reached on Monday-Friday 7:00 am - 5:00 pm, off on Wednesday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz R. Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Primary Examiner
AU2131
9/22/05

DGC